

Description of the true female of *Copaxa joinvillea* SCHAUS, 1921 with biogeographical notes (Lepidoptera: Saturniidae, Saturniinae)

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Abstract: The true female of *Copaxa joinvillea* SCHAUS, 1921 is described and figured for the first time. Its biogeographical data is updated.

Key words: Distribution, taxonomy.

Descrição da fêmea de *Copaxa joinvillea* SCHAUS, 1921 com nota biogeográfica (Lepidoptera: Saturniidae, Saturniinae)

Resumo: A fêmea de *Copaxa joinvillea* SCHAUS, 1921 é descrita e figurada pela primeira vez. Os dados de biogeografia são atualizados.

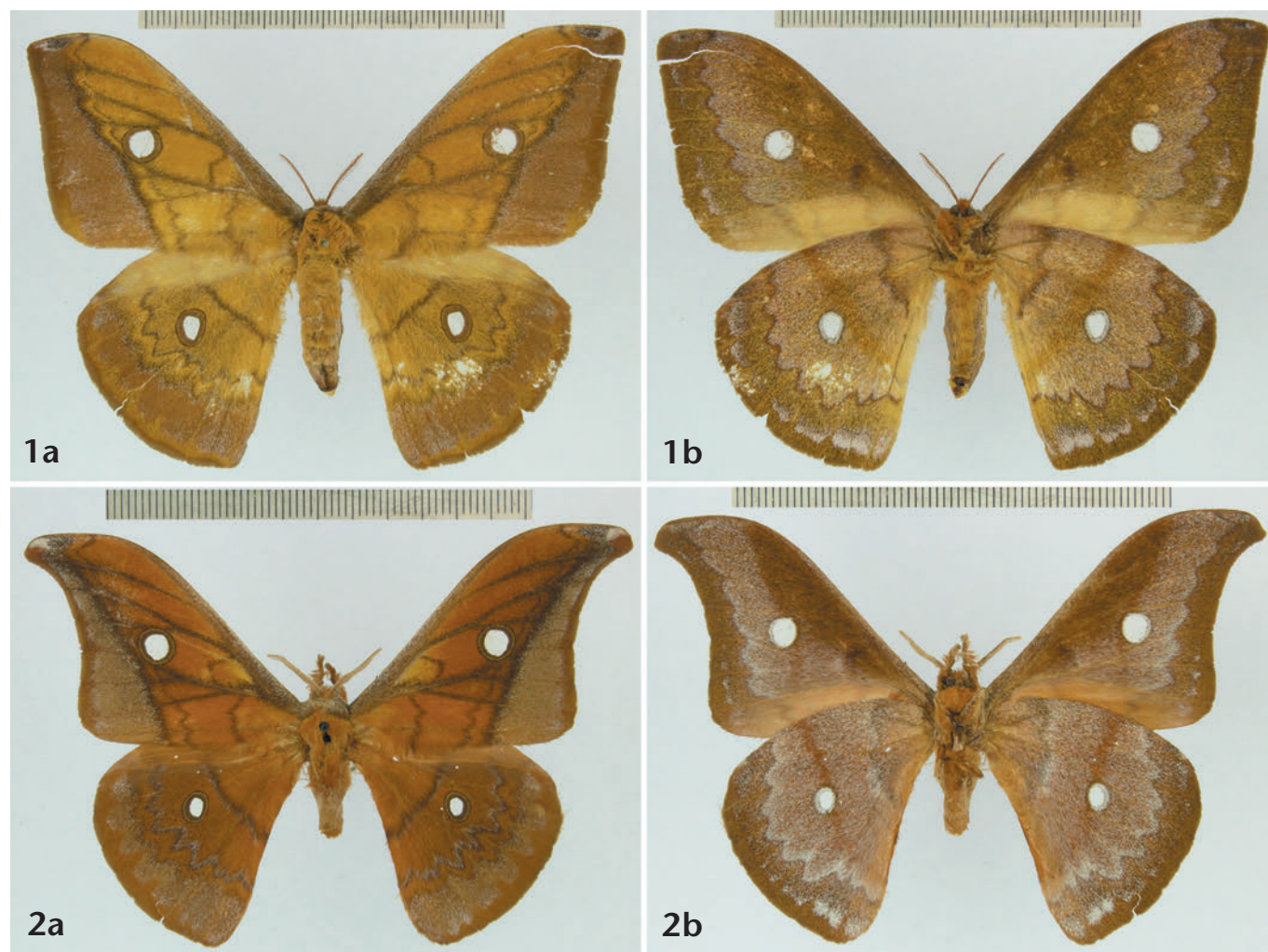
Beschreibung des richtigen Weibchens von *Copaxa joinvillea* SCHAUS, 1921 mit Anmerkungen zur Biogeografie (Lepidoptera: Saturniidae, Saturniinae)

Zusammenfassung: Das richtige Weibchen von *Copaxa joinvillea* SCHAUS, 1921 wird erstmals beschrieben und abgebildet. Die Angaben zur Biogeografie und Verbreitung der Art werden auf der Basis neuer Kenntnisse dargestellt.

Introduction

Copaxa joinvillea SCHAUS, 1921 belongs to a small subset of the *Copaxa canella* WALKER, 1855 species group encompassing *canella*, *joinvillea* and *Copaxa flavobrunnea* BOUVIER, 1930. There are very few records of this species in collections, all before the 1970ies and, although there has been exhaustive recent collecting on the Brazilian Atlantic slope, no recently collected specimens are known.

The taxonomic history of *Copaxa joinvillea* and its co-species is confusing and has led to frequent misidentifications. DRAUDT (1929: pl. 105) figured 2 ♂♂ of this species subset; one as *joinvillea* and the other as „*C. joinvillea* f. *vitellina* DRAUDT, 1929“. LEMAIRE (1978) assigned both to *C. canella*, but judging from the blackish antennae and coloration in the painted illustrations, we believe both illustrations more resemble *C. flavobrunnea* BOUVIER, 1930



Colour plate: Figs. 1–2: *Copaxa joinvillea*. Fig. 1: ♀ dorsal (a), ventral (b). Fig. 2: ♂ dorsal (a), ventral (b). — Scales in mm.

which was resurrected by WOLFE (2005) to full species status, formerly also synonymized by LEMAIRE (1975) in *C. canella*. Unfortunately, the original specimen of *f. vitellina*, described on infrasubspecific level, apparently no longer exists, and therefore DRAUDT's possible precedent over BOUVIER's *flavobrunnea* for this species cannot be proven. As for the black antennae illustration of *C. joinvillea*, SCHAUS's words clearly describe the "Antennae ... reddish brown", not black. Because of its similar size and shape, *C. flavobrunnea* has consistently been misidentified as *C. joinvillea*. CASAGRANDE & O. MIELKE (1985) described the biology and early stages of "*Copaxa joinvillea*", now identified as *C. flavobrunnea*. The ♀ of *C. joinvillea* was described by LEMAIRE (1975) as "brown".

Herbert MIERS, the only living collector of this species, has carefully described to the senior author important aspects of the behavior, flight period and ♀ characters of *C. joinvillea*. His description of the ♀ did not match that of the supposed ♀ in LEMAIRE (1978) and D'ABRERA (1995).

While examining some Brazilian collections the senior author found 9 ♀♀ of *C. joinvillea* and confirmed his suspicion that the supposed ♀ in the literature was misidentified. A new description was needed. This paper describes the ♀ of *Copaxa joinvillea* and lists the institutions where specimens can be found.

Collections abbreviations (all in Brazil):

| | |
|---------|---|
| CGCM | Coll. Carlos G. C. MIELKE, Curitiba, Paraná. |
| COM | Coll. Olaf H. H. MIELKE, Curitiba, Paraná. |
| FIOCRUZ | Coll. Fundação Instituto Oswaldo Cruz, Rio de Janeiro, Rio de Janeiro. |
| MNRJ | Coll. Museu Nacional do Rio de Janeiro, Rio de Janeiro. |
| MZUP | Coll. Museu de Zoologia da Universidade de São Paulo, São Paulo. |
| UFPC | Coll. Pe. Jesus S. MOURE, Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná. |

Copaxa joinvillea SCHAUS, 1921

Figs. 1a, 1b, 2a, 2b.

Studied material (27 ♂♂, 9 ♀♀, all Brazil): **Rio de Janeiro:** 1 ♂ (COM 13.078), Itatiaia, 1. II. 1932, ZIKÁN leg.; 1 ♀ (COM 65.998), National Park Itatiaia, 900 m, 1. x. 1962, [O.] MIELKE & D'ALMEIDA leg. — **São Paulo:** 19 ♂♂, 4 ♀♀ (MZUP), 5 ♂♂ (FIOCRUZ), Salesópolis, Boracéia, 850 m, VI., VII., VIII. — **Santa Catarina:** 3 ♀♀ (MNRJ), Joinville; 1 ♂, 1 ♀ (CGCM 20.819, 21.588), Usina do Pirai, Joinville, 22. VIII. 1968, 12. VIII. 1969, H. MIERS leg.; 1 ♂ (UFPC 8.761), "Pará", 1959 (probably mislabeled), ex coll. Richard FREY.

Diagnosis

The ♀ of *C. joinvillea* is easily distinguished from *C. flavobrunnea* and *C. canella* by its yellow, instead of brown or fawn colored, ground color of the wings and body; by its fore- and hindwings with postmedial area darker than the antemedial, and by the dark and well-marked veins on forewing.



Fig. 3: Geographical distribution of *Copaxa joinvillea* in Brazil.

Description

♀ (Figs. 1a, 1b): Wingspan 105 mm, forewing length 58 mm. Antennal rami (ca. 30 segments), frons and labial palpi rusty yellow. Thorax dorsally dark yellow, ventrally lighter. Forelegs darker than the others. Forewing moderately elongated, apex not pronounced, outer margin straight to slightly convex; medial and basal areas deep yellow, postmedial area brown suffused with light grey scales with thin and lighter marginal band; ante- and postmedial lines dark brown, the former convex, the latter undulate from the costa to M_3 , then straight to inner margin, bordered anteriorly by a line with the same color; veins are well marked; ocellus single, brown border with dark brown ring; ventrally greenish yellow, postmedial line dark brown with whitish band proximally; ocellus with white border. Hindwing same pattern as forewing, except less diffused with brown on the deep yellow ground color; ante-medial line straight to slightly convex, postmedial undulate; ventrally greenish yellow suffused with light grey scales except a band anteriorly to ocellus; ante- and postmedial lines dark brown, the latter more than the first; ocellus like forewing; marginal area darker with white pre-marginal band. Abdomen dorsally dark yellow, ventrally pale yellow.

♂ (Figs. 2a, 2b): Description see LEMAIRE (1978).

Immature stages: Unknown.

Geographical distribution

C. joinvillea is known only from southeastern Brazil along the Atlantic coastal mountain area, from Joinville city (MIERS personal comm.), Pirahy, Blumenau, and Yragua, all on the northeastern part of Santa Catarina state; and several ♂♂ and ♀♀ were found from Boracéia, Salesó-

polis County, 850 m, in São Paulo state, plus one pair from Itatiaia, in Rio de Janeiro state. Pirahy, mentioned by SCHAU (1921) and LEMAIRE (1978), is a hydro-electric power plant in Joinville County at 50 m elev. at the base of the Atlantic mountains. Yaragua, mentioned by D'ABRERA (1998), is likely Jaraguá do Sul (Fig. 3).

Ethology

According to H. MIERS, ♂♂ are nocturnal and are attracted to a light trap very early in the morning from 4:00 h to sunrise; ♀♀ are attracted early in the night. Its flight period is mostly July and August, during the Brazilian winter.

Acknowledgements

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References

- CASAGRANDE, M., & MIELKE, O. (1985): Biologia e estágios imaturos de *Copaxa joinvillea* SCHAU (Lepidoptera – Saturniidae – Saturniinae). – Acta Biológica Paraná, Curitiba, **14**: 181–191.
- D'ABRERA, B. (1998). Saturniidae mundi. Saturniid moths of the world. Part III. – Keltern (Goecke & Evers), Melbourne & London (Will House), X + 171 pp.
- DRAUDT, M. (1929–1930). 12. Familie: Saturnidae [sic]. – Pp. 713–827, 45 pls. (101–137, 142, 111A, 111B, 117A, 117B, 117C, 117D, 130A) in: A. SEITZ (ed.) (1913–1940), Die Gross-Schmetterlinge der Erde. Eine systematische Bearbeitung der bis jetzt bekannten Gross-Schmetterlinge. vol. 6, Die Amerikanischen Spinner und Schwärmer. – VIII + 1452 pp. text, VIII pp. [index for plates] + pls. 1–185. – Stuttgart (A. Kernen).
- SCHAU, W. (1921): New species of Lepidoptera in the United States National Museum. – Proceedings of the U.S. National Museum, Washington, **59**: 349–396.
- LEMAIRE, C. (1975). Liste synonymique des Attacidae américains (Lep.). Première partie. Attacinae BLANCHARD, 1840. – Bulletin de la Société entomologique de France, Paris, **80**: 89–98.
- (1978). Les Attacidae Américains. The Attacidae of America (= Saturniidae). Attacinae. – Neuilly-sur-Seine (Ed. C. Lemaire), 238 pp. + 49 pls.
- WOLFE, K. L. (2005): A resurrection of *Copaxa canella flavobrunnea* BOUVIER, 1930 and elevation to species status, with illustration of the early stages (Lepidoptera: Saturniidae). – Nachrichten des Entomologischen Vereins Apollo, Frankfurt am Main, **26** (1/2): 31–33.

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